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SPONSORED PROJECT INITIATION

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USE INITIATION SHEET AS TERMINATION SHEET Date: 11/23/76

Project Title: Demonstration: Filtration of Waste Stabilization Pond Effluents.

Project No: A-1923

Project Director: Dr. T. F. Craft

Sponsor: Coastal Plains Regional Commission, Charleston, S.C. 29401

Agreement Period: From 11/17/76 Until 11/17/77 79

Type Agreement: Grant No. 10740003

Amount: $65,108 ($45,000 upon execution of grant, $15,000 upon receipt of the semi-annual report, and $5,108 upon receipt of the annual report.)

Reports Required: Semi-Annual Report and Annual Report.

Sponsor Contact Person (s):

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Defense Priority Rating: None

Assigned to: Applied Sciences Laboratory (School/Laboratory)

COPIES TO:

Project Director
Division Chief (EES)
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A-1923

ENGINEERING EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

May 22, 1978

Mr. McIver Watson
Coastal Plains Regional Commission
215 East Bay Street
Charleston, SC 29401

Dear Mr. Watson:

This letter is intended to present information on the status of our project "Demonstration: Filtration of Waste Stabilization Pond Effluents" and along with the presentation to be made at the meeting at Wakulla Springs is to constitute our semi-annual progress report.

The filter unit was moved from the pond at Duluth, Georgia to its present location at Monroe, Georgia, with an intermediate stop to have the defective landing gear of the trailer replaced. The Monroe pond is a dual-cell arrangement with aerators in the first cell. This pond receives the municipal sewage from Monroe and the wastes from a large chicken processing plant. The total pond area is approximately 30 acres. The filter is positioned at the effluent structure of the pond some fifty feet from a public road. Through the courtesy of Monroe officials, a power pole was installed at the site and we are able to operate without use of the gasoline powered generator. The logistical problem of the generator is considerable, even when it is functioning properly, and the availability of power is a tremendous asset. Continuous operation is now customary except on weekends. The mechanical problems that were so troublesome during the first year have subsided to a great extent, and the equipment operates reliably with few exceptions.

It has been found that filtration without an added coagulant is not practical. The individual algal cells are quite small, and a very fine-grained filter medium is required to remove them. However,

when fine medium is used, an excellent quality effluent is obtained, but only for a short time, as filter blinding occurs very quickly. Coarser media allow longer runs, but with correspondingly poorer quality effluent.

A feed system has been added to the filter equipment so that controlled amounts of chemical coagulant solutions can be added directly to the line bringing water from the pond to the filter. A wide range of addition rates is possible by varying both the feed rate and the coagulant concentration.

It has been found that the addition of alum greatly enhances the effectiveness of suspended solids removal. Effluent has been produced with solids around 1 mg/l, which is much better than the required 30 mg/l. The capacity of the filter for collecting floc and allowing filtration to continue is limited, however, and head loss builds up rather rapidly as floc accumulates. Change to a coarser medium has improved the results, and it is possible to get several hours run before the available head is completely lost. A deeper filter should produce even better results.

It is also believed that the use of a polymer to replace some (or all) of the alum will produce a less voluminous floc, and result in longer runs. To date 6 or 8 polymers have been evaluated, but the results have not been as good as expected. A number of other polymers are now on order and will be evaluated as soon as received.

Other sites for evaluation have been visited, and as soon as optimization of results can be achieved, additional ponds will be visited.

Yours truly,

T. F. Craft, Ph.D.
Senior Research Scientist

TFC/ml